

REMARKS

Claims 1-6, and 8-20 are pending in the present application.

Claim 7 is canceled with this Amendment.

Claims 1 and 19 are amended to include the subject matter of canceled claim 7 and to more particularly point out and clearly define the invention.

Claims 3-6 and 16-18 are withdrawn from consideration.

Claims 1, 2, 8-15, 19 and 20 are rejected.

Applicants affirm that a provisional election was made with traverse to prosecute the invention of A) chemical roughening, and B) organo-silicon compound of claims 7 and 19-20.

Applicants respectfully submit that the Examiner must examine both species recited in claim 7, i.e., organo-silicon compounds and silsesquioxanes. See MPEP §803.02, which states “If the members of the Markush group are sufficiently few in number or so closely related that a search and examination of the entire claim can be made without serious burden, the examiner must examine all members of the Markush group in the claim on the merits, even though they are directed to independent and distinct inventions.” Two species is sufficiently few in number such that searching both organo-silicon compounds and silsesquioxanes does not present an undue burden on the Examiner. Further, it is improper for the Office to refuse to examine that which applicants regard as their invention, unless the subject matter in a claim lacks unity of invention. *In re Harnish*, 206 U.S.P.Q. 300 (CCPA 1980); and *Ex Parte Horzumi*, 3 U.S.P.Q. 2d 1059 (Bd. Pat. App. & Int. 1984). Both species are used for the same purpose, which is to increase adhesion between roughened metal and polymer materials (page 10, lines 10-28 and page 11, lines 8-11). Accordingly, there is unity of invention.

Applicants respectfully request examination of both species.

Claims 1-2, 9-10, 13-15 and 19-20 are rejected under 35 U.S.C. §102(b) as allegedly anticipated by WO 02/24974. Applicants respectfully traverse this rejection.

Independent claims 1 and 19 are amended to recite that the liquid primer composition comprises one or more organo-silicon compounds. WO 02/24974 does not teach a method of treating a metal surface where a liquid primer comprises one or more organo-silicon compounds as recited in the present claims.

Applicants respectfully request withdrawal of the rejection of claims 1-2, 9-10, 13-15 and 19-20 under 35 U.S.C. §102(b) as anticipated by WO 02/24974.

Claims 8, 11, and 12 are rejected under 35 U.S.C. §103(a) as allegedly unpatentable over WO 02/24974. Applicants respectfully traverse this rejection.

Claims 8, and 11 depend directly from present claim 1, and claim 12 depends from claim 11. Since claim 1 is patentable over WO 02/24974 for the reasons discussed above, claims 8, 11 and 12 also are patentable over WO 02/24974.

Applicants respectfully request withdrawal of the rejection of claims 8, 11 and 12 under 35 U.S.C. §103(a) over WO 02/24974.

Claim 7 was rejected under 35 U.S.C. §103(a) as allegedly unpatentable over WO 02/24974 taken in view of U.S. 6,221,176 to Merchant et al.

Claim 7 is canceled. Accordingly, this rejection is moot.

Although claim 1 is amended to recite the subject matter of claim 7, claim 1 would not have been obvious in view of WO 02/24974 in combination with Merchant et al.

The various silanes used in Merchant et al. are not employed to increase adhesion between copper and a polymer material as alleged in the Office Action at page 5, paragraph 8. Merchant et al. specifically employ silanes for preventing, minimizing, and/or delaying the propagation of microcracks in copper foil due to the local imposition of energy from repeated bending and unbending cycles (col. 3, lines 6- 11, lines 44-55, and col. 15, lines 11-17). Merchant et al. specifically teach using adhesives such as epoxy based adhesives, polyamide based adhesives, acrylic based adhesives, and phenolics and polyvinylbutyral resins to enhance adhesion between copper foil and a flexible substrate (col. 26, lines 33-40). Nowhere do Merchant et al. teach or suggest using silanes to enhance adhesion between copper foil and a flexible substrate.

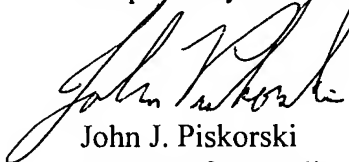
The method of the present invention uses the primer containing the organo-silicon to improve adhesion between a roughened metal surface and a polymer material applied to the roughened metal surface (specification, page 10, lines 10-28), not to prevent microcracking of copper foil in flexible circuits (col. 1, lines 6-12, and col. 2, lines 20-29) as in Merchant et al. A person of skill in the art would not have been motivated to consider Merchant et al. to make the presently claimed invention. Each is directed to a different purpose to solve different problems.

Further, Merchant et al. are not properly combinable with WO 02/24974. There would have been no reason or motivation to include the silanes of Merchant et al. in the compositions and methods of WO 02/24974. As just discussed Merchant et al. are directed to treating copper foils with silanes to prevent, minimize, and/or delay the propagation of microcracks due to the local imposition of energy from repeated bending and unbending cycles (col. 3, lines 6-11). No such problem is addressed in WO 02/24974. In contrast, WO 02/24974 is directed to improving peel strength between polymer laminates and copper surfaces (page 7, lines 14-17), not to treat copper foils to prevent, minimize, and/or delay the propagation of microcracks due to the local imposition of energy from repeated bending and unbending cycles. Each is directed to a different purpose. Further, as discussed above, Merchant et al. do not provide any reason or motivation to use silanes to enhance adhesion between a polymer materials and copper. Accordingly, there would have been no reason or motivation to include the silanes of Merchant et al. in the compositions and methods of WO 02/24974. For the reason just discussed, Merchant et al. is not properly combinable with WO 02/24974.

Favorable consideration and allowance of claims 1, 2, 8-15, 19 and 20 are earnestly solicited.

Should the Examiner have any questions concerning this response or this application, or should she believe this application is for any reason not yet in condition for allowance, she is respectfully requested to telephone the undersigned at the number set forth below to expedite allowance of this application.

Respectfully submitted,



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